

Poly's Day 4 WS

Date _____ Period _____

Evaluate each function at the given value. Use Synthetic Substitution.

1) $f(a) = a^5 + 8a^4 + 21a^3 + 26a^2 - 14a + 19$ at $a = -5$

2) $f(n) = n^5 + 10n^4 + 28n^3 + 11n^2 - 26n - 34$ at $n = -4$

State the number of possible (Complex & Real) roots and the possible rational roots for each equation.

3) $x^4 + 10x^2 + 24 = 0$

4) $x^3 - 2x^2 + x - 2 = 0$

5) $x^4 + x^2 - 30 = 0$

6) $x^2 - x - 20 = 0$

Write a polynomial function of least degree with integral coefficients that has the given zeros. Leave your answers in factored form but without i's or sqrt's.

7) $-\frac{4}{5}, \sqrt{3}, -3i$

8) $-4, \frac{1}{2}, -5$

9) $-2, \frac{1}{2}, 0$

10) $0, -3 + \sqrt{6}$

11) $5, 2 + \sqrt{5}$

12) $-3i$ mult. 2

13) $-\frac{5}{2}, 3i$

14) $3, -1 - 3i$

Answers to Poly's Day 4 WS (ID: 1)

1) -11

2) -10

3) # of complex roots: 4

Possible rational roots:

$$\pm 1, \pm 2, \pm 3, \pm 4, \pm 6, \pm 8, \pm 12, \pm 24$$

4) # of complex roots: 3

Possible rational roots: $\pm 1, \pm 2$

5) # of complex roots: 4

Possible rational roots:

$$\pm 1, \pm 2, \pm 3, \pm 5, \pm 6, \pm 10, \pm 15, \pm 30$$

6) # of complex roots: 2

Possible rational roots:

$$\pm 1, \pm 2, \pm 4, \pm 5, \pm 10, \pm 20$$

8) $f(x) = 2x^3 + 17x^2 + 31x - 20$

10) $f(x) = x^3 + 6x^2 + 3x$

13) $f(x) = 2x^3 + 5x^2 + 18x + 45$

7) $f(x) = 5x^5 + 4x^4 + 30x^3 + 24x^2 - 135x - 108$

9) $f(x) = 2x^3 + 3x^2 - 2x$

11) $f(x) = x^3 - 9x^2 + 19x + 5$

14) $f(x) = x^3 - x^2 + 4x - 30$

12) $f(x) = x^4 + 18x^2 + 81$